

COMPONENTS

FAQ

Q You often mention the number and type of PCI Express slots, such as PCI-E x16 and PCI-E x1. What's the difference between the types?

A The x16 and x1 refers to the number of pairs of PCI Express lanes the slot uses. An x1 slot has a single pair of lanes, which operate at 2.5Gbit/s (one transmitting and the other receiving data). An x16 slot has a massive 40Gbit/s bandwidth.

As the number of lanes increases, so does the size of the slot, so a PCI-E x16 slot is much bigger than an x1 slot. An expansion card will work in any slot of the same size or larger, so you could install a PCI-E x1 card in an x16 slot.

The different slots and the bandwidths they offer enable you to connect peripherals and use the available bandwidth more efficiently. For example, graphics cards, which are bandwidth hungry, use x16 slots, while a wireless card needs just an x1 slot.

David Ludlow
Reviews Editor

david@computershopper.co.uk

POWERCOLOR Radeon X1900XT

★★★★★

£370 inc VAT



Having spent a generation of graphics cards playing catch-up with nVidia, ATI went back to the drawing board to work on its new chip. The result is the Radeon X1900XT, and we looked at PowerColor's version of the card.

Where ATI's previous top-of-the range cards, the X1800 series, used highly clocked components to achieve fast throughputs, the X1900XT takes a rather different approach: lots of pixel pipelines. The X1900XT has 48 pipelines, three times more than the X1800 and double the number of nVidia's GeForce 7800 GTX. That's a lot of power.

On top of this, the graphics core runs at a speedy 625MHz. The card has 512MB of GDDR3 memory running at 725MHz (1.45GHz effective), which helps it deal with high-resolution graphics. On paper it appears to do exactly what ATI wanted it to do, which is to provide fast graphics at high resolutions and high levels of detail.

We put the card through its paces in a number of games. First, Doom 3, which uses OpenGL for its 3D engine. ATI has previously lagged behind nVidia on OpenGL performance and the X1900XT is no different, falling just behind a GeForce 7800 GTX.

Most games use Direct3D, though, and here the X1900XT doesn't disappoint. In our Call of Duty 2 test it outstripped every other card we've reviewed by 15fps. We pushed the resolution up to 1,600x1,200 and put every setting to maximum, and the card still managed an incredible 37.1fps. This is our most difficult graphics test and the X1900XT stormed through it without a problem.



We found similar results in Splinter Cell and 3DMark05. This is by far the fastest card we've ever reviewed and, perhaps more importantly, one that still maintains the highest levels of detail. Unbelievably, a faster version of this card, the Radeon X1900XTX, is available. To see how this performs, read our review of the Mesh PC on page 12.

Performance doesn't apply only to games, though. A lot of work has been put into video playback, especially High Definition (HD). If you use this card, you should get some of the cleanest images you're likely to see outside high-end consumer video players.

If you're thinking it can't all be good news, you're right. A card this powerful comes at a high price, and £370 for a graphics card is a lot of money. It's also quite large, taking up two slots, so it's no use if you want to install it in a mini PC.

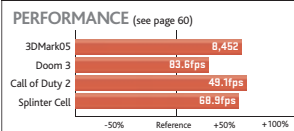
It's pricy, but PowerColor's X1900XT will do everything you could want a graphics card to do. You'll need a 20" LCD to display the 1,600x1,200 resolution it excels at, though. Those on a tighter budget should opt for a GeForce 7800 GT, which offers excellent performance at resolutions of 1,280x1,024 and costs around £140 less.

David Ludlow

SUMMARY

- ✓ Incredibly fast
- ✓ Copes with high resolutions
- ✗ Expensive

GRAPHICS CARD ATI Radeon X1900XT graphics, PCI-E x16 interface, 625MHz core, 512MB GDDR3 RAM running at 725MHz (1.45GHz effective), two DVI interfaces, TV out PART CODE GX-060-PC SUPPLIER www.overclockers.co.uk DETAILS www.powercolor.com



Also consider...

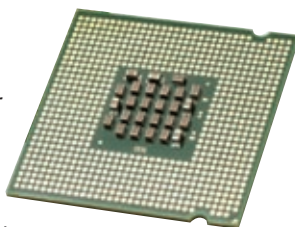
INTEL Pentium 4 640

★★★★★

£141 inc VAT



Intel's Pentium 4 640 processor supports 64-bit instructions and has a massive 2MB of level 1 cache. Combined with a clock speed of 3.2GHz, this adds up to a high-performance chip that'll cope with any application. It did well in our benchmarks and is good value, too.



PROCESSOR 3.2GHz processor, LGA775, 200MHz external bus, 16KB L2 cache, 2,048KB L1 cache PART CODE BX80547PG3200F SUPPLIER www.savastore.com DETAILS www.intel.com ✓ Fast 64-bit instructions ✗ You may not need 64-bit application support FULL REVIEW Jan 2006

AMD Athlon 64 3200+

★★★★★

£109 inc VAT



AMD's Athlon 64 3200+ is a powerful and relatively cheap 64-bit processor, which did well in all our benchmarks. It should appeal to overclockers in particular, because AMD processors are easy to tweak. The Athlon 64 3200+ is also an excellent choice for games and should help your PC muster a few more frames per second.



PROCESSOR 2GHz processor, Socket 939, 200MHz external bus, 128KB L2 cache, 512KB L1 cache PART CODE ADA3200BPBOX SUPPLIER www.savastore.com DETAILS www.amd.com ✓ Powerful, easy to overclock ✗ Not as fast as Pentium 4 chips for video encoding FULL REVIEW Jan 2006

GE CUBE X1600Pro

★★★★★

£100 inc VAT



If you're one of the many people who have an AGP motherboard, you may be wondering where the new graphics cards are for your PC. GeCube hasn't forgotten you – it has released the Radeon X1600Pro.

The Pro has 12 pixel pipelines, a core running at 500MHz and 256MB of DDR2 RAM running at 800MHz (1.6GHz effective). For comparison, the X1600XT has a 600MHz core and 256MB of GDDR3 RAM running at 700MHz (1.4GHz effective). There's little, on paper at least, to differentiate between the two cards. In our games tests there was little difference, too, although the XT has the slight edge.

As you can see from the performance results, the card struggled in all our tests at a resolution of 1,280x1,024. However, dropping Doom 3 to a

resolution of 1,024x768 improved the frame rate to a playable 29.3fps. Slightly older games will run well at this resolution, while new, more demanding games such as Call of Duty 2 will require you to drop the detail levels. This is a mid-range graphics card, though, so it's best suited to occasional gamers or those more interested in strategy games than first-person shooters.

This card will serve you well if you're interested in entertainment, as it provides smooth playback of high-definition video files. This is a good mid-range card for AGP systems, but nVidia's 6600 GT is a slightly better buy, while those looking for faster performance should get the 6800 GT.

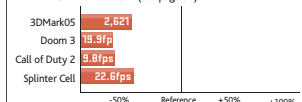
David Ludlow

SUMMARY

- ✓ Good performance
- ✗ No better than existing AGP cards

GRAPHICS CARD ATI Radeon X1600Pro graphics, AGP 8x interface, 500MHz core, 256MB DDR2 RAM running at 800MHz (1.6GHz effective), two DVI interfaces, TV out **PART CODE** GC-RX1600PGA2-D3 **SUPPLIER** www.lowestonweb.com **DETAILS** www.gecube.com.tw

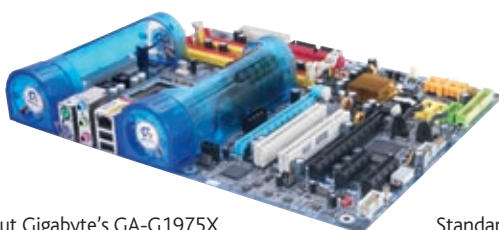
PERFORMANCE (see page 60)



GIGABYTE GA-G1975X

★★★★★

£170 inc VAT



The first things you notice about Gigabyte's GA-G1975X motherboard are the two blue heat sinks around the LGA775 processor socket. With two fans on each heat sink, this motherboard looks as if it means business.

This first impression isn't wrong, as this is the first board we've seen that uses Intel's i975X chipset. It supports all LGA775 processors, even the new dual-core chips with 1,066MHz frontside buses.

The board has two PCI-E x16 slots, which can accept two graphics cards, although nVidia hasn't yet released SLI drivers for this chipset. However, this board supports CrossFire, so you can run two ATI cards. It also lags slightly behind nVidia's latest nForce 4 chipset, as running two graphics cards slows both slots to x8 speed rather than the full x16.

Standard performance is very good but, using the performance mode in the BIOS, we overlocked our 3.6GHz processor to 3.7GHz, achieving a score of 142 in our application tests. The system was very stable, thanks to the extra fans.

The GA-G1975X has all the features you'd expect on a motherboard, including four SATA2 ports with RAID, Gigabit Ethernet, two PCI-E x4 slots and two PCI slots. However, the PCI slots are between the graphics card slots, so using dual cards blocks access to them.

This accomplished board delivers stable, high performance, but it's one of the most expensive we've seen and doesn't support SLI. We'd rather buy an nForce 4 SLI board for around £70 less.

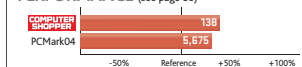
David Ludlow

SUMMARY

- ✓ High performance
- ✓ Good for overlocking
- ✓ Supports all Intel's processors
- ✗ Very expensive
- ✗ Doesn't support SLI

MOTHERBOARD Intel 975X chipset, supports Intel LGA775 processors, two PCI, two PCI-E x16, two PCI-E x4, four DDR2 DIMM slots, Gigabit Ethernet LAN, four SATA2, one IDE, one FireWire, three USB2 **PART CODE** GA-G1975X **SUPPLIER** www.fastekcomputers.co.uk **DETAILS** www.gigabyte.com.tw

PERFORMANCE (see page 60)



ANTEC P150

★★★★★

£102 inc VAT



Antec's iPod-white steel P150 case looks great on the desk and is built to keep your PC silent. It doesn't rattle, it has acoustic insulation and the hard disks screw into rubber grommets to prevent vibrations echoing through the P150. A silent Antec Neo HE 430W modular power supply is also included, all of which makes this case excellent value.



SILENT PC CASE ATX case, 120mm fan, two USB2, one FireWire, two audio ports, two 5¼" drive bays, one external 3½" drive bay, four internal 3½" drive bays **PART CODE** 0761345-019151-0 **SUPPLIER** www.morecomputers.com **DETAILS** www.antic.com Attractive; comes with power supply Drive bays hard to access **FULL REVIEW** Mar 2006

ENERMAX Liberty ELT500AWT

★★★★★

£75 inc VAT

Enermax's Liberty

ELT500AWT is a modular 500W SLI-certified power supply. While it has enough power for a PC stuffed full of components and drives, you have to fit only the power cables you need. It's well priced, comes with a carry bag for your spare cables and is silent in operation.



POWER SUPPLY 500W modular power supply, five modular ports, two PCI-E, six Molex, four SATA **PART CODE** 0761345-05506-2 **SUPPLIER** www.candcentral.co.uk **DETAILS** www.enermax.co.uk Wide range of connectors Cheaper PSUs available **FULL REVIEW** Feb 2006

ECS KN1 SLI Extreme

★★★★★

£77 inc VAT



ECS's KN1 SLI Extreme motherboard uses

nVidia's nForce 4 SLI chipset, so you can use two graphics cards together. It also supports all Socket 939 Athlon 64 processors, so it's an ideal basis for a powerful computer.

Performance is excellent, and the motherboard has every port you could possibly want. For the price, this is excellent value.



MOTHERBOARD nForce 4 SLI chipset, supports AMD Socket 939 processors, three PCI, one PCI-E x16, one PCI-E x1, four DIMM slots, two Gigabit Ethernet, ECS Top Hat Flash, three IDE, six SATA2, four USB2, FireWire **PART CODE** KN1 SLI **SUPPLIER** www.pcnextday.co.uk **DETAILS** www.ecs.uk.com Fast; lots of connectors SLI mode blocks access to PCI-E x1 slot **FULL REVIEW** Nov 2005

ATI

All-in-Wonder 2006 Edition

★★★★

£126 inc VAT

All-in-Wonder X1800XL

★★★★★

£252 inc VAT

All-in-Wonder X1900

★★★★★

£289 inc VAT

ATI's All-in-Wonder graphics cards used to be among our favourites, but there's been little emphasis on new cards for quite some time. However, that's all going to change as ATI has grabbed back the reins and is selling the All-in-Wonder range direct. This month we review three new products: the 2006 Edition, the X1800XL and the top-of-the-range X1900.

All three products use the PCI-E x16 interface and come with a hybrid digital and analogue TV tuner, FM radio and video capture. While the cards will work with third-party applications such as Microsoft's Windows XP Media Center Edition and CyberLink's PowerCinema, ATI provides its own Multimedia Center software. As bundled software goes, it's not too shabby and gives you all the functions you'd expect, including the ability to pause live TV and schedule recordings. However, the only EPG you can use with the software is TVTV (which costs £15 a year), as Multimedia Center

does not pick up the free EPG information that's broadcast with Freeview. This is a real shame. We'd suggest buying PowerCinema as this works brilliantly with Freeview.

Each card also comes with analogue inputs and outputs for video capture and TV-out. As with previous versions of the product, there's quite a mess of cables. Extending the half-hearted break-out box would make it neater.

All the cards come with ATI's AVIVO technology, which helps accelerate high-definition (HD) video including the new H.263 codec. The cards also have HDCP-compliant DVI ports, so you can play protected content on HD TVs.

The 2006 Edition is at the bottom of the range and uses a Radeon X1300 graphics chip clocked at 450MHz. It comes with 256MB of GDDR3 RAM running at 400MHz (800MHz effective). With just four pixel pipelines it's not the fastest graphics performer. As you can see from our benchmarks, it couldn't manage a playable frame rate in any of our games tests. However, turning Doom 3 down to a resolution of 1,024x768 with no anti-aliasing improved the frame rate to 32.5fps. This means it's an acceptable card if you don't mind playing the occasional game at low detail settings.

The 2006 Edition also loses out to its big brothers on other fronts. First, there's no remote in the box, so you can't use the multimedia software from the comfort of your armchair. Second, it comes with only Premier Elements 2.0, while the others also include Photoshop Elements 4.0. Finally, there's no component output included in the box, although you can buy the necessary cable separately if you want.

The X1800XL and X1900 look very similar, and both come with remote controls, the full break-out box including component video, and Photoshop Elements 4.0 and Premier Elements

2.0, which is a very generous bundle. The main difference is the graphics performance.

The All-in-Wonder X1800XL has 16 pixel pipelines, a 500MHz core and 256MB of GDDR3 memory running at 500MHz (1GHz effective), which is exactly the same specification as the standard X1800XL. Performance was very good across all our tests, although Call of Duty 2, which is very demanding, ran at a smoother 27.7fps with anti-aliasing turned off. Even so, it shows this card can cope with the current range of titles at high resolutions and detail settings.

The X1900 is a slower version of the X1900XT (reviewed on page 42). It has a 500MHz core speed and 256MB of GDDR3 running at 480MHz (960MHz effective). However, it has 48 pixel pipelines, which helps it achieve excellent scores in our benchmarks. While it struggles a little at a resolution of 1,600x1,200 with high detail settings, it still provides amazing performance that's more than good enough for gamers.

As with previous All-in-Wonder graphics cards, the new range is best suited to mini PCs that lack the room to house a dedicated graphics card and a separate TV tuner. Of the three models on test, the X1900 is the better buy. The 2006 Edition is too underpowered for games players and doesn't come with a remote control or Photoshop Elements. The X1800XL, while able to compete with high-end graphics cards and bundled with a remote control and Photoshop Elements, is expensive for what you get.

The X1900, however, has high-end performance, a remote control and Photoshop Elements, and it's only slightly more expensive than the X1800XL version. For all three cards, though, we recommend that you upgrade from the supplied software to Windows MCE or PowerCinema to get Freeview's EPG.

David Ludlow

▼ ATI All-in-Wonder 2006 Edition



▼ ATI All-in-Wonder X1800XL



▼ ATI All-in-Wonder X1900XL

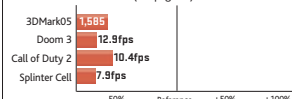


2006 EDITION

- ✓ Cheap
- ✗ No remote control
- ✗ Poor games performance

GRAPHICS CARD ATI Radeon X1300 graphics, PCI-E x16 interface, 450MHz core, 256MB GDDR3 RAM running at 400MHz (800MHz effective), DVI interface, hybrid analogue/digital TV tuner, FM radio, SCART, S-video and composite
PART CODE 100-714602
SUPPLIER www.microdirect.co.uk
DETAILS www.ati.com

PERFORMANCE (see page 60)

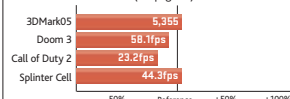


X1800XL

- ✓ Good performance
- ✓ Good software bundle
- ✗ Doesn't pick up Freeview EPG

GRAPHICS CARD ATI Radeon X1800XL graphics, PCI-E x16 interface, 500MHz core, 256MB GDDR3 RAM running at 500MHz (1GHz effective), DVI interface, hybrid analogue/digital TV tuner, FM radio, SCART, S-video, component and composite, remote control
PART CODE 100-714402
SUPPLIER www.overclockers.co.uk
DETAILS www.ati.com

PERFORMANCE (see page 60)



X1900

- ✓ Excellent performance
- ✓ Good software bundle
- ✗ Doesn't pick up Freeview EPG

GRAPHICS CARD ATI Radeon X1900 graphics, PCI-E x16 interface, 500MHz core, 256MB GDDR3 RAM running at 480MHz (960MHz effective), DVI interface, hybrid analogue/digital TV tuner, FM radio, SCART, S-video, component and composite, remote control
PART CODE 100-714800
SUPPLIER www.vgastore.com
DETAILS www.ati.com

PERFORMANCE (see page 60)

